

INTELLECTUAL PROPERTY RIGHTS AND GLOBAL WARMING

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INTRODUCTION

The issue of global warming is everywhere. Not only does the topic fill the pages and screens of all media, e.g., newspapers, reviews,¹ or films,² it also regularly and increasingly occupies private companies,³ economists and businessmen,⁴ lawyers,⁵ scientists,⁶ and politicians⁷ alike. It even interests the museums.⁸ Global warming, which is mainly caused by the increase of carbon dioxide (CO₂) in the atmosphere,⁹ or most of global warming at least, is, it seems, the result of human activity. But human activity is far from new. What is new is a certain type of human activity—that linked to industrial development and therefore progress. The question then arises: could intellectual property rights (IPRs) be the cause of global warming? After all, the industrial revolution has brought with it IPRs, among the most relevant of which is the right to protect inventions. And the primary aim of patent law is to give an incentive to inventors to invent new products, processes and machines.

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1. See, e.g., Sharon Begley, *Global Warming is a Hoax**, NEWSWEEK, Aug. 13, 2007, cover story; Sharon Begley, *The Truth About Denial*, NEWSWEEK, Aug. 13, 2007, at 20; THE INTERNATIONAL HERALD TRIBUNE, June 19, 2007, at 1 (discussing a peer-reviewed article, “Climate change and trace gases,” authored by six leading scientists who conclude that the earth is in imminent danger because of global warming); Steve Conner, *The Earth Today Stands in Imminent Peril*, THE INDEPENDENT ON SUNDAY, June 19, 2007, available at http://environment.independent.co.uk/climate_change/article2675747.ece (last visited Jan. 11, 2008); *Kyoto Protocol Comes into Force*, BBC NEWS, Feb. 16, 2005, available at <http://news.bbc.co.uk/2/hi/science/nature/4267245.stm> (last visited Jan. 11, 2007); *The Greening of America*, THE ECONOMIST, Jan. 27, 2007, at 9.

2. See, e.g., AN INCONVENIENT TRUTH (Lawrence Bender Productions, Participant Productions 2006), available for purchase at <http://www.an-inconvenient-truth.com>.

3. To cite just a few completely random company advertisements I encountered: Vattenfall, “Energy for activists, empty words just add [CO₂],” THE ECONOMIST, Jan. 27, 2007, at 2; Eurostar “Environmentally Co2nscious,” THE ECONOMIST, Feb. 10, 2007, at 56.

4. See, e.g., the carbon trading market, which is allowed by the Kyoto Protocol and started in 2008. See Peter Davies, *European Union Environmental Law, An Introduction to Key Selected Issues*, Ashgate: Aldershot, 2004, p. 287.

5. See, e.g., Council Directive 2004/101/EC, 2004 O.J. (L 338) 18 (EC).

6. For examples, see the references cited in this article.

7. See, e.g., this year’s G8 summit.

8. London’s Tate Modern Gallery had an exhibit on CO₂ emissions during the summer of 2007.

9. It is also caused by other so-called greenhouse gases (GHGs).

Copyright law's rationale is similar. Some of the greatest inventions of the last two centuries include the car, the train, the plane, the refrigerator, and the computer, and with them comes the use of energy, generally oil and coal, to make them work. These are some of the causes that contribute the most to the increase in levels of CO₂ in the planet's atmosphere. For instance, a third of CO₂ emissions in the European Union (EU) are generated by transport.¹⁰ The intellectual property academic community has so far paid very little attention, if any, to this increasingly important issue.¹¹ It is time, however, that the national and international intellectual property systems and treaties be reassessed in view of this problem that touches every human being, if one accepts that human activity is the main cause of global warming as the vast majority of the scientific community indicates.¹²

This Article concentrates on how the existing international intellectual property instruments and EU law already provide safeguards to limit the levels of CO₂ in the atmosphere.¹³ Some reference will also be made to UK law, to take the law of one country, when international or EU law is silent or not specific on the question.

10. Charlotte Streck & David Freestone, *The EU and Climate Change, in REFLECTIONS ON 30 YEARS OF EU ENVIRONMENTAL LAW, A HIGH LEVEL OF PROTECTION?*, 85, 102 (Richard Macrory ed., Europa Law Publishing 2006).

11. See, e.g., Gregory N. Mandel, *Promoting Environmental Innovation with Intellectual Property Innovation: A New Basis for Patent Rewards*, July 5, 2005, available at <http://ssrn.com/abstract=756844>; F. Scott Kieff, *Patents for Environmentalists*, 9 WASH. U. J.L. & POL'Y 307 (2002) (discussing only generally both the interface between patents and the protection of the environment). CARLOS M. CORREA, *TRADE RELATED ASPECTS OF INTELLECTUAL PROPERTY RIGHTS, A COMMENTARY TO THE TRIPS AGREEMENT*, 99-101 (Oxford University Press 2007) (discussing the TRIPS provisions referring to the protection of the environment); Brad Sherman & Nicola Atkinson, "Intellectual Property and Environmental Protection" [1991] EIPR 165; Jeremy Phillips, *People in Greenhouses*, Editorial, 2 J. INTEL. PROP. L. & PRAC., 269, 269 (May 2007).

12. See, e.g., Peter Davies, *Trading in Greenhouse Gas Emissions: The European Community's Endorsement of Emissions Trading*, INT'L ENERGY LAW & TAX. R. 105 (2006) (citing several sources including the European Environment Agency and the Intergovernmental Panel on Climate Change, <http://www.ipcc.ch>). See also Scientific Expert Group Report on Climate Change and Sustainable Development, Feb. 2007, <http://www.unfoundation.org/SEG>; THE INTERNATIONAL HERALD TRIBUNE, June 19, 2007, at 1; Begley, *supra* note 1,. I therefore make the assumption that humans are responsible for the best part of the increase of CO₂ emissions and, therefore, follow the opinion of the majority of the scientific community.

13. I will limit the discussion to CO₂ although there are many other GHGs. More research would need to be undertaken before the arguments made here could be extrapolated to GHGs in general and even more generally to the protection of the environment as a whole. Nevertheless, sometimes reference will be made to the relationship between IPRs and the environment more generally when the laws do not specifically refer to CO₂.

Reference will also sometimes be made to U.S. law for comparison purposes. More generally, the solutions developed in this Article may not only apply in Europe, but may also inspire other countries, including the United States, as they are based on international instruments and universal arguments that can apply in any country. For reasons of space, and because they are perhaps the most important rights as far as generating CO₂ is concerned, this Article focuses only on patents and copyrights. This Article has two parts. Part I examines how the current patent and copyright laws may already help reduce levels of CO₂. Thereafter, Part II envisages how intellectual property laws could be improved to further reduce the levels of CO₂ if this is something governments and/or the international community decide to do.

I. THE CURRENT INTELLECTUAL PROPERTY SYSTEM AND ITS IMPACT ON GLOBAL WARMING

This Part is divided into six Sections. Before looking at the actual provisions of current patent and copyright laws, their underlying rationales are examined to enlighten whether they have an impact on carbon emissions (Section A). Section B looks at general provisions of the international agreements to determine whether they deal with the interface between IPRs and the environment and, more specifically, levels of CO₂. From this first general overview, it will be seen that there are different rules within intellectual property laws that directly or indirectly safeguard the environment and favor the reduction of CO₂. There are three ways in which intellectual property laws already permit the reduction of CO₂: the first is through morality and *ordre public* provisions (Section C), the second is through the use of compulsory licenses (Section D), and the third is through the exhaustion principle (Section E). Section F concludes this Part.

A. *Rationales for Intellectual Property Protection*

At first sight, IPRs can be seen as neutral, as their aim is simply to give an incentive to invent new technologies or create original works. For instance, Article 1, Section 8, Clause 8 of the U.S. Constitution (the Copyright and Patent clause) simply gives Congress the power “to promote the Progress of Science and useful Arts by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.” This is one of the main justifications for having both patent and copyright laws; it is known as the incentive theory or utilitarian argument. Under this justification, if individuals

know they may obtain an exclusive right (the reward that allows them to exclusively exploit their intellectual property and therefore reap the monetary benefits from it) if they produce a new product or an original creation, they will be encouraged to create or innovate. Under this justification, general wellbeing or social welfare is achieved, as the world is better off with better products (e.g., better medicines, better machines) and more cultural diversity. This argument is based on the principle of utility and the writings of late 18th- and 19th-century philosophers and economists Jeremy Bentham and John Stuart Mill.¹⁴ The other main justification for having patents and copyrights is that they are natural rights. It is natural that an inventor or a creator obtains an intellectual property right to the fruits of his or her labor. This was first developed by Locke in the 17th century. Although he thought of only physical labor,¹⁵ this theory has been extrapolated to include intellectual labor. These are the two main classical justifications for both rights.¹⁶ One more recent and important justification for IPRs is that they are human rights based on the fact that they are property rights, albeit intellectual.¹⁷ As human rights all have the same rank, they must therefore be balanced with each other and cannot be absolute.¹⁸

14. JOHN STUART MILL, *PRINCIPLES OF POLITICAL ECONOMY* (W.J. Ashley ed., London: Longmans, Green & Co, 1909) 1848; *THE WORKS OF JEREMY BENTHAM* (John Bowring ed.) 1843.

15. JOHN LOCKE, *The Second Treatise of Government: An Essay Concerning the True Original, Extent, and End of Civil Government*, in *TWO TREATISES OF GOVERNMENT* 267, 285-302 (Peter Laslett ed., Cambridge University Press 1960).

16. For detailed discussions on these justifications, see, e.g., ARTHUR R. MILLER & MICHAEL H. DAVIS, *INTELLECTUAL PROPERTY: PATENTS, TRADEMARKS AND COPYRIGHT IN A NUTSHELL* 16 (3d ed., West Publishing 2000). For copyright in particular, see, e.g., CHRISTOPHE GEIGER, *DROIT D'AUTEUR ET DROIT DU PUBLIC À L'INFORMATION, APPROCHE DE DROIT COMPARÉ* 23 (Litec 2004); LUCIE M.C.R. GUIBAULT, *COPYRIGHT LIMITATIONS AND CONTRACTS: AN ANALYSIS OF THE CONTRACTUAL OVERRIDABILITY OF LIMITATIONS ON COPYRIGHT* 9-10 (Kluwer Law International 2002); J.A.L. STERLING, *WORLD COPYRIGHT LAW* 56 (Sweet & Maxwell 1999); ALAIN STROWEL, *DROIT D'AUTEUR ET COPYRIGHT: DIVERGENCES ET CONVERGENCES* 144 (Bruylant/LGDJ: Bruxelles/Paris, 1993); WILHEM GROSHEIDE, *AUTEURSRECHT OP MAAT*, Diss 11, 128-45 (Utrecht, Deventer Kluwer: Amsterdam, 1986). Other less developed justifications exist and are therefore not discussed here.

17. See, e.g., Paul L.C. Torremans, *Copyright as a Human Right*, in *COPYRIGHT AND HUMAN RIGHTS: FREEDOM OF EXPRESSION - INTELLECTUAL PROPERTY - PRIVACY* 1 (Paul L.C. Torremans ed., Kluwer Law International 2004); GEIGER, *supra* note 16.

18. GEIGER, *supra* note 16, at 167; Christophe Caron, *Liberté d'expression et liberté de la presse contre droit de propriété intellectuelle*, 2 C.C.E. 25 (2002); TORREMANS, *supra* note 17, at 17; Thomas Dreier, *Contracting Out of Copyright in The Information Society: The Impact on Freedom of Expression*, in *COPYRIGHT AND FREE SPEECH: COMPARATIVE AND INTERNATIONAL ANALYSES* 385, 395 (Jonathan Griffiths & Uma Suthersanen eds., Oxford

What consequences do these justifications have in the context of this article? Under the natural rights theory, it seems that any inventor or creator should have a property right to his or her intellectual labor, whatever the consequence it has on global warming. Nonetheless, one could argue that according to an extrapolation of the principles advocated by Locke, the inventor or creator should consider the impact of his or her invention or work on the environment. Indeed, for Locke, the right to private ownership requires that the owner leaves in the commons enough and as good for others and that he or she may not remove more out of the commons than she or he can use (the “non-waste” condition).¹⁹ Under the utilitarian justification or incentive theory, the idea is to grant exclusive rights to creators and inventors in the public interest—in other words, to promote social welfare. Therefore, this means that IPRs should not damage the environment and, more specifically, increase levels of CO₂, as this is arguably not generating social welfare. More specifically, under the U.S. Copyright and Patent Clause, which seems to support this incentive theory, the idea is that these two IPRs must promote progress.²⁰ What is progress is a philosophical question, which would take too long to debate here. But under a certain view, it may include the improvement of human life, which should include general well-being.²¹ Therefore, again, it should mean that patents and copyrights should not be given for inventions and creations that increase the levels of CO₂ in the atmosphere if this leads to global warming. Or at least a balance should be made between the benefits of the invention/creation and its carbon impact.²² It should be noted that the most recent multi-regime international instrument on IPRs (the 1994 Agreement on Trade-Related Aspects of Intellectual

University Press 2005).

19. LOCKE, *supra* note 15, ¶ 27, 287-88, ¶ 31, 290.

20. To date, neither courts nor academics, at least in Europe, have paid much attention to the definition of progress. See Dotan Oliar, *Making Sense of the Intellectual Property Clause: Promotion of Progress as a Limitation on Congress's Intellectual Property Power*, 94 GEO. L.J. 1771, 1837 (2006) and references cited. W. Van Caenegem, *Intellectual Property Law and The Idea of Progress*, 3 INTELLECTUAL PROPERTY QUARTERLY 237 (2003). But see MANDEL, *supra* note 11, at 5 (noting that patent law's purpose to promote progress is “a promising premise for the goal of incentivizing environmental innovation”).

21. Some views may also include the well-being of any living beings including animals and perhaps plants.

22. As far as the meaning of promoting progress is concerned, some have suggested interpreting the Patent and Copyright Clause as follows: “An intellectual property enactment does not ‘promote the progress of science and useful arts’ and is therefore unconstitutional if its marginal benefits, in terms of creativity and knowledge, are extremely outweighed by its marginal costs in terms of creativity and knowledge.” Oliar, *supra* note 20, at 1840.

Property Rights (TRIPs)) mentions in Article 7 that the protection and enforcement of IPRs should contribute to social and economic welfare, thereby also endorsing, albeit not expressly, a reduction in carbon emissions if this is conducive to social and economic welfare.²³ Article 7 of TRIPs will be discussed in more detail in the next Section. Finally, there is as yet no human right to a healthy environment,²⁴ but human rights to life and privacy, for instance, may come in conflict with IPRs or otherwise be said to have the same goal—human well-being—as IPRs under the human rights approach. In conclusion, possibly under the naturalist justification and at least under the incentive theory and human rights approaches, which can be seen as having the same end aim, IPRs' goal can be said to be congruent with the reduction of CO₂.

B. General Provisions

When one asks oneself how intellectual property laws cater to the protection of the environment and especially for the reduction of CO₂ in the atmosphere, the first thing that comes to mind is to look into the intellectual property international treaties and conventions. What do these instruments say about the relationship between IPRs and the protection of the environment? First of all, it is mostly patents that are concerned with the environment, as they protect inventions that may have a negative impact on the environment such as new cars, planes, trains, and more generally products, machines, or processes that generate CO₂. Copyright works protect creations that are generally harmless to the environment (e.g., drawings, sculptures, and films) but may sometimes generate CO₂. This section looks at the two multi-regime treaties on IPRs and examines whether they contain general provisions on the interface between IPRs and the environment and, more specifically, levels of CO₂ in the atmosphere.

As the protection of the environment, particularly the problem of global warming, is a new issue, it is logical that the old conventions do not address this problem specifically.²⁵ However, the Paris Convention for the Protection of Industrial Property of 1883, the main and oldest convention dealing with patents, already provided a general provision

23. Agreement on Trade-Related Aspects of Intellectual Property Rights art. 7, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, Legal Instruments - Results of the Uruguay Round vol. 31 (1994), 33 I.L.M. 81, 1997 (1994).

24. See *infra* Part II.C.

25. See *infra* Part I.C.2.

preventing patent owners from blocking progress.²⁶ Article 5A(2)-(4) of the Paris Convention provides that countries can impose compulsory licenses if there is an abuse of the exclusive right, e.g., failure to work the patented invention. This provision is not specific to the protection of the environment but to progress. In any case, it can be used to force a patent holder to work its environmentally-friendly invention.

As it is more recent, TRIPs directly and indirectly addresses environmental concerns. Several articles of TRIPs are relevant: Articles 7 and 8, generally, and Article 27.2 regarding patents. This section focuses on Articles 7 and 8, which can apply to all IPRs. Section C will address Article 27.2, as it relates exclusively to patents. Articles 7 and 8 may be read as general safeguards that may ensure that IPRs do not encourage global warming.

Article 7, "Objectives," provides that "[t]he protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a *manner conducive to social and economic welfare, and to a balance of rights and obligations.*"²⁷ On the other hand, Article 8.2, "Principles," provides in sum that measures may be needed to prevent intellectual property holders from abusing their rights.²⁸

Articles 7 and 8 are important articles that provide interpretation of the TRIPs agreement as a whole.²⁹ According to Article 7, IPRs should work "in a manner conducive to social and economic welfare" and require a balance between rights and obligations of IPR holders.³⁰ However, the agreement does not give any standard to make this balance.³¹ On the other hand, the first part of Article 7 "means that the recognition and enforcement of intellectual property rights are subject to higher social values."³² One of these values of course is the respect of

26. Paris Convention for the Protection of Industrial Property, Mar. 20, 1883, as last revised at Stockholm, July 14, 1967, 21 U.S.T. 1583 [hereinafter Paris Convention].

27. TRIPs, *supra* note 22, art. 7 (emphasis added).

28. *Id.*, art. 8.2.

29. CORREA, *supra* note 11, at 93.

30. TRIPs, *supra* note 23, art. 7.

31. The High Commissioner, *Report of the High Commissioner on The Impact of the Agreement on Trade-Related Aspects of Intellectual Property Rights on Human Rights*, ¶ 23, delivered to the Comm. On Human Rights, delivered to the Sub-Comm'n on the Promotion and Protection of Human Rights, U.N. Doc. E/CN.4/Sub.2/2001/13 (June 27, 2001) [hereinafter *Report of the High Commissioner*]. See also TRIPs, *supra* note 23, art. 27.2.

32. CORREA, *supra* note 11, at 99.

human rights. While international intellectual property instruments have not, or have little, recognized the tension between IPRs and human rights,³³ TRIPs recognizes values underlying human rights in the exceptions to the exclusive rights, e.g., the protection of the environment.³⁴ But the main question is whether the World Trade Organization (WTO) panel and the Appellate Body should consider human rights when interpreting TRIPs. Many have suggested that the WTO must respect human rights.³⁵

As to Article 8, some have argued that it is “essentially a policy statement that explains the rationale for measures taken under Articles 30, 31, and 40.”³⁶

In any case, a number of developing countries, the Ministerial Declaration on the TRIPs Agreement and Public Health,³⁷ and paragraph 19 of the Doha Declaration³⁸ all confirm the importance of Articles 7 and 8 in interpreting TRIPs. These two articles should be important in construing the exceptions to exclusive rights, e.g., fair use in copyright law and research and access to pharmaceuticals in the context of patent rights.³⁹ One might add to this that Articles 7 and 8 are also crucial in interpreting the exceptions that favor the reduction of CO₂, mainly Articles 27.2 and 31. These will be examined in the next two Sections. The respect of human rights will be discussed in Part II, Section C.

C. Morality and Ordre Public Provisions

As the combined general provisions of the Paris Convention and TRIPs point out, IPRs cannot be abused and must be balanced against higher values. Within intellectual property international instruments, some specific provisions already exist to take these values into account. These provisions are reflected in European law. The first two

33. *Id.*

34. *Id.* at 100 (citing *Report of the High Commissioner*); TRIPs, *supra* note 23, art. 27.2; *Report of the High Commissioner*, *supra* note 30, ¶ 22.

35. CORREA, *supra* note 11, at 100-01; see Richard Ford, *The Morality of Biotech Patents: Differing Legal Obligations in Europe?*, 6 E.I.P.R. 315, 317 (1997).

36. DANIEL GERVAIS, *THE TRIPs AGREEMENT, DRAFTING HISTORY AND ANALYSIS* 121 (2d ed., Thomson, Sweet & Maxwell 2003).

37. World Trade Organization, Ministerial Declaration on the TRIPs Agreement and Public Health, WT/MIN(01)/DEC/2, 41 I.L.M. 755 (2002).

38. World Trade Organization, Ministerial Declaration of 14 November 2001, WT/MIN(01)/DEC/1, 41 I.L.M. 746 (2002) [hereinafter Doha Declaration].

39. CORREA, *supra* note 11, at 103.

provisions are the morality and public order, also known as public policy or *ordre public* provisions (these latter three expressions will be used interchangeably). Section C.1 examines the provisions relating to patents, and Section C.2 examines those relating to copyright.

1. Patents

It is in Article 27 of TRIPs where provisions for the respect of the environment and therefore implicitly the more specific problem of global warming can be found. Paragraph 1 of Article 27 simply obliges Members to ensure that patents may be granted in all fields of technology.⁴⁰ On the other hand, Paragraph 2 *allows* Members to prohibit the patentability of inventions in order to protect *ordre public* or morality including to “avoid serious prejudice to the environment, provided that such exclusion is not made merely because the exploitation is prohibited by their law.”⁴¹ It has long been accepted that no IPRs can be granted for immoral inventions or creations.⁴² For patents, this is reflected in Article 27.2 of TRIPs. In addition, TRIPs goes further as it includes the prejudice to the environment as contrary to *ordre public* or morality. However, as with compulsory licenses (*see* Section D.1. below), Article 27.2 is not mandatory. Members are free to prohibit immoral inventions or not.

First, it can be said that part of Article 27.2 does not provide a clear standard to assess when there is a serious prejudice to the environment.⁴³ It is true that the text requires the prejudice to be serious, thereby both narrowing the provision and rendering it clearer. But on the other hand, this seriousness standard is still imprecise. The provision also seems narrow because it refers to “avoid[ing]” prejudice to the environment, “which would seem to exclude cases in which the aim of the refusal would be to mitigate or control such prejudice.”⁴⁴ Nevertheless, this is a useful yardstick, as the seriousness may be actual or potential since Article 27.2 does not distinguish between the two (which is a positive aspect of the Article).⁴⁵ In any case, this provision

40. TRIPs, *supra* note 23, art. 27.

41. *Id.*, art. 27.2.

42. This is, however, not the case in U.S. patent law anymore. *See* Margo A. Bagley, *Patent First, Ask Questions Later: Morality and Biotechnology in Patent Law*, 45 WM. & MARY L. REV. 469, 469-70 (2003).

43. *See* M. Bruce Harper, *TRIPs Article 27.2: An Argument for Caution*, 21 WM. & MARY ENVTL. L. & POL’Y REV. 381, 383-84 (1997).

44. CORREA, *supra* note 11, at 290.

45. *Id.*

has the merit to exist; it is a step in the right direction⁴⁶ and should prompt national legislatures to adopt specific measures to reduce levels of CO₂ in the atmosphere. Patent offices of Members that have incorporated Article 27.2 into their laws should therefore examine whether the invention for which a patent is applied actually or potentially seriously damages the environment. As far as global warming is concerned, depending on whether they take a broad or restrictive view, patent offices could either not grant patents for any invention which emits CO₂ or make a cost-benefit analysis in terms of the value of the invention for society and the levels of CO₂ emitted.⁴⁷ This might be the preferred option, as the standard is a serious prejudice against the environment. Thus, requiring that every invention does not emit any CO₂ at all might be construing the exception too broadly. Also, arguably, it is only the *increase* of CO₂ in the atmosphere that is causing global warming.

How do patent laws in Europe deal with the issue of the reduction of CO₂? Patent law is very similar throughout Europe because most European countries are parties to the European Patent Convention (EPC), which provides common rules on patentable subject matter among other topics.⁴⁸ Similar to Article 27.2 of TRIPs, Article 53(a) of the EPC provides that “European patents shall not be granted in: (a) respect of inventions the publication or exploitation of which would be contrary to *ordre public* or morality, provided that the exploitation shall not be deemed to be so contrary merely because it is prohibited by law or regulation in some or all of the Contracting States.”⁴⁹ A major difference is that the provision is mandatory. Another difference with Article 27.2 of TRIPs is that there is no specific reference to the protection of the environment, certainly because at the time it was adopted in 1973, this concern had not yet emerged. In any case, inventions the exploitation of which would be contrary to *ordre public* can nowadays include serious prejudice to the environment as has been

46. See also Ford, *supra* note 35, at 316.

47. See Oliar, *supra* note 20, at 1840 (proposing test based on the Copyright and Patent Clause); *supra* INTRODUCTION.

48. See generally Convention on the Grant of European Patents, Oct. 5, 1973, available at http://www.wipo.int/clea/docs_new/pdf/en/ep/ep001en.pdf (last visited Jan. 17, 2008) [hereinafter EPC].

49. *Id.*, art. 53. According to the interpretation of this article, it is only the exploitation of the patent that must give offense. See, e.g., MARGARETE SINGER & DIETER STAUDER, THE EUROPEAN PATENT CONVENTION, *A Commentary*, 87 (3d ed., vol. 1, Sweet & Maxwell 2003).

held by the European Patent Office (EPO) Board of Appeal in *Plant Genetic Systems*, its most recent relevant decision on this topic.⁵⁰ There has been no case so far dealing with an invention that might increase the levels of CO₂ in the atmosphere. However, the various branches of the EPO have had to deal with cases based on Article 53(a) that dealt with genetically modified animals or plants, which could seriously prejudice the environment.

The EPO's current view is that it will assess whether an invention seriously prejudices the environment in the sense that it is for the European institutions to decide what morality and public order mean.⁵¹ On the other hand, its view is that exceptions to patentability must be narrowly construed.⁵² Therefore, inventions the exploitation of which is likely to seriously prejudice the environment are not patentable under Article 53(a) EPC.⁵³ On the other hand, there is no set test to do so. As the EPO Board of Appeals in *Plant Genetic Systems* states, "a balancing exercise is not the only way of assessing patentability, . . . perhaps useful in situations in which an actual damage and/or disadvantage (eg (sic) suffering of animals . . .) exists."⁵⁴ This balancing exercise or utilitarian (cost-benefit) approach was adopted by the Board of Appeal in its earlier *Harvard/Onco Mouse* decision.⁵⁵ In that case, which involved the patenting of a genetically modified mouse in order to cure cancer, it held that the application of Article 53(a) "would seem to depend mainly on a careful weighing up of the suffering of animals and possible risks to the environment on the one hand, and the invention's usefulness to mankind on the other."⁵⁶ The case went back to the Examining Division, which held the invention patentable because finding a cure for cancer was desirable and the mouse would help achieve this aim; the

50. *Plant Cells/Plant Genetic Systems*, T 356/93, 1995 O.J. E.P.O. 545 (TBA) at Reasons ¶ 5 [hereinafter *Plant Genetic Systems*]. See also SINGER & STAUDER, *supra* note 49, at 88; LIONEL BENTLY & BRAD SHERMAN, *INTELLECTUAL PROPERTY LAW* 438 (2d ed., Oxford University Press 2004).

51. *Plant Genetic Systems*, T 356/93 at Reasons ¶¶ 4-5. Previously, the Opposition Division held that the EPO was not the place to make ethical decisions. See *Plant Genetic Systems*, 24 IIC 618 (1993); *Howard Florey/Relaxin*, [1995] E.P.O.R. 541, 552; BENTLY & SHERMAN, *supra* note 50, at 437.

52. *Plant Genetic Systems*, T 356/93 at Reasons ¶ 18.

53. EPC, *supra* note 48, art. 53.

54. *Plant Genetic Systems*, *supra* note 50, at Reasons ¶ 18.8.

55. See *Harvard/Onco-Mouse*, [1990] O.J. E.P.O. 451 (Examining Div.); *Harvard/Onco-Mouse*, T19/90 [1990] E.P.O.R. 501; [1990] O.J. E.P.O. 490 (TBA); [1991] E.P.O.R. 525 (Examining Div.). See BENTLY & SHERMAN, *supra* note 50, at 436-37.

56. *Harvard/Onco-Mouse*, T 19/90 [1990] E.P.O.R. at 513; T 0315/03, 6 July 2004, available at <http://legal.european-patent-office.org/dg3/pdf/t030315ex1.pdf>.

harm caused by the invention to the mouse weighed less in the scale.⁵⁷ This approach was later followed in a case involving a patent by Upjohn for a mouse genetically modified to lose hair. In contrast with *Harvard/Onco Mouse*, because the harm suffered by the mouse was greater than the benefit from the invention, the EPO refused the patent application.⁵⁸ As stated in *Plant Genetic Systems*, this test has not been discarded, but other tests could be used. As far as the protection of the environment is concerned, a threat to it must be sufficiently substantiated at the time the EPO makes its decision to revoke the patent.⁵⁹ *Greenpeace*, which tried to revoke *Plant Genetic Systems'* patent on plants and seeds resistant to certain herbicides, only attracted evidence that there was a *possibility* of some undesired events happening because of the invention (e.g., transformation of crops into weeds, damage to the ecosystem).⁶⁰ This evidence was not sufficient to substantiate the threat to the environment.⁶¹ As some have noted, "[i]t may well be that today a stronger case could be made out on just these lines."⁶²

Applying these principles to global warming, it could mean that the cost-benefit analysis test could be used only if there is evidence that a specific invention causes actual damage or disadvantage to the environment. In that case, if the risk that the invention increases CO₂ outweighs its benefit(s) to society, then it should not be patentable under Article 53(a) of the EPC. On the other hand, the rule stated in *Plant Genetic Systems* may not allow the patent office to revoke single inventions that each emit a small amount of CO₂ because there will generally be a lack of evidence that a single invention can cause actual damage to the environment. However, if the EPO, and more generally European countries and Members of the EPC wish to apply Article 27.2 of TRIPs, they may have to be more flexible as to non-patentability in the case of serious damage to the environment, as seemingly this includes potential as well as actual damage.⁶³ In any case, currently, as it is still difficult to invent alternative sources of energy that emit no CO₂,

57. *Id.*

58. BENTLY & SHERMAN, *supra* note 50, at 436 (citing THE INDEPENDENT, Feb. 2, 1992).

59. *Plant Genetic Systems*, *supra* note 50, at Reasons ¶ 18.5.

60. *Plant Genetic Systems*, *supra* note 50, at Reasons ¶ 18.6.

61. *Id.*

62. WILLIAM CORNISH & DAVID LLEWELYN, INTELLECTUAL PROPERTY: PATENTS, COPYRIGHT, TRADE MARKS & ALLIED RIGHTS, 21-11 (6th ed., Sweet & Maxwell 2007).

63. See CORREA, *supra* note 11, at 290.

it would perhaps be too harsh to impose a zero carbon emission standard on every invention from the start. In addition, it is only the increase of CO₂ beyond a certain level that contributes to global warming. How patent offices should reach a decision as to the patentability of inventions emitting CO₂ will be discussed in Part II, Section D.

2. Copyright and Related Rights

Article 17 of the Berne Convention, although not in express terms, allows Members to deny copyright protection to works for public policy or morality reasons.⁶⁴ It states that “[t]he provisions of this Convention cannot in any way affect the right of the Government of each country of the Union to permit, to control, or to prohibit, by legislation or regulation, the circulation, presentation, or exhibition of any work or production in regard to which the competent authority may find it necessary to exercise that right.” This provision has been used by states to censor works in order to protect public order, public morals, or state security among other things, as states have interpreted this article broadly.⁶⁵ This interpretation of Article 17 refers mainly to censorship.⁶⁶ This means that compulsory licenses cannot be introduced under it. There is no specific provision in the Berne Convention that denies copyright protection if the work damages the environment or, more specifically, increases levels of CO₂ in the atmosphere. It may be logical that such specific provisions are absent from the text of the Berne Convention in view of its rather old status (1886, last revised in 1979), but Member States can in any case use Article 17 to deny copyright protection to works that increase levels of CO₂ if they so wish in view of the wide interpretation that they can give it. The other more recent copyright international instruments, namely TRIPs and the 1996 World Intellectual Property Organization (WIPO) treaties, could have clarified that works increasing emissions of CO₂ could not receive copyright protection. Perhaps they did not because drafters were not concerned

64. BENTLY & SHERMAN, *supra* note 50, at 259 (citing SAM RICKETSON, *THE BERNE CONVENTION FOR THE PROTECTION OF LITERARY AND ARTISTIC WORKS* 9.72 (Kluwer & QMW 1987); SAM RICKETSON & JANE C. GINSBURG, *INTERNATIONAL COPYRIGHT AND NEIGHBOURING RIGHTS, THE BERNE CONVENTION AND BEYOND* ¶ 13.88 (2d ed., Oxford University Press 2006); *see* Berne Convention for the Protection of Literary and Artistic Works art. 17, Sept. 9, 1886, as last revised July 24, 1971, 25 U.S.T. 1341 [hereinafter *Berne Convention*]).

65. RICKETSON & GINSBURG, *supra* note 64, ¶ 13.88.

66. *See id.*, ¶ 13.90.

with this issue at the time (as indeed those treaties were adopted to address specific issues that affected copyright, mainly digitization and the Internet) or did not think copyright works could damage the environment.

European Directives in the field of copyright do not address this problem. What about UK law? In the United Kingdom, courts have developed the notion that works that are “obscene, sexually immoral, defamatory, blasphemous, irreligious or seriously deceptive of the public”⁶⁷ should be refused copyright protection.⁶⁸ The current law is that courts will not only deny copyright protection if the work’s content is immoral, but also if the circumstances in which it was created were immoral.⁶⁹ However, two aspects of exclusion of subject matter on the grounds of “public policy” are unclear. First, it is unclear whether there is no copyright at all in such works or whether the copyright exists but will not be enforced. As the end result is similar, this is not such an issue in this context. Second, the boundaries of immorality, or rather of the public policy “exception,” are not clear. Could it include works that could damage the environment or, more specifically, increase levels of CO₂ in the earth’s atmosphere? If courts apply Article 17 of the Berne Convention liberally or analogously to Article 27.2 of TRIPs, or even its Articles 7 and 8, they could very well include serious prejudice to the environment into the public policy exception.

However, as Bently and Sherman note, the public policy exception leads to a paradox: since the works are non-copyrightable, it puts them in the public domain, thereby favoring their broad dissemination.⁷⁰ This is true for works that are by definition intangible, such as literary, dramatic, and musical works, films, and broadcasts. This is less true of some artistic works that must be replicated with certain tangible materials (e.g., sculptures, works of architecture, or artistic craftsmanship), except of course if they are reproduced by photographic process. Thus for those “tangible works,” the morality provision is useful if interpreted to avoid copyright protection for works seriously damaging the environment. As far as architectural works are concerned, the morality exclusion could prevent the copyrightability of

67. CORNISH & LLEWELYN, *supra* note 62 at 448.

68. *See, e.g.*, *Glyn v. Weston Feature Film Co.*, (1915) 1 Ch. 261, 269 (a book and a film based on that book were denied protection, as they were advocating a “sensual adulterous intrigue”). More recently, in *Attorney General v. Guardian (No. 2)*, [1988] 2 W.L.R. 805, [1990] 1 A.C. 109, the House of Lords approved the *Glyn* ruling.

69. *Guardian (No. 2)*, 2 W.L.R. 805, 1 A.C. 109.

70. BENTLY & SHERMAN, *supra* note 50, at 112.

architectural plans for buildings emitting CO₂. This will give an incentive to architects to design carbon neutral buildings. Surely architects will be less enticed to draw plans for non-eco-friendly buildings if those architectural plans are not protected. In addition, the morality or *ordre public* condition of patent law will provide an incentive to inventors of features used in buildings to innovate more “greenly.” As to other tangible artistic works (e.g., engravings, sculptures, and works of artistic craftsmanship), similarly, the morality provision could possibly be used to force artists to create those works with materials that emit very little CO₂ or were produced with little or no emissions. However, this may be pushing the morality clause a bit far and may restrict artists’ freedom as to the choice of materials too much.

A related issue is whether “intangible” copyright works should, under the morality or public policy provision, be required to be recorded on eco-friendly media. This would arguably be pushing the public policy provision quite far, and it could be said that it has nothing to do with copyright law but that it instead relates to, e.g., environmental law. If the public policy rule is not applied, in any case, it is clear that copyright law does not prevent recycling of the medium on which the copyright work is embodied. This is explored in Section E. below. But the case could be made that the morality provision in copyright law mandates that copyright works may have to be embodied in “green media.” For literary and dramatic works and some artistic works (graphic and photographic), this may include recycled paper. One could even argue that they should be available only in electronic form.⁷¹ However, several reasons go against this view. First, it may not always be feasible (e.g., with respect to graphic works like hand drawings and paintings). Second, it may not always be convenient that all intangible works be in digital format only (think of newspapers and books). Third, it may for policy grounds be unadvisable for three reasons. The first reason is that it may unduly restrict the creative freedom of artists as to their choice of materials, as for tangible copyright works. The second reason is that, while use of paper may mean the destruction of trees, digital storage also requires energy (electricity, which may still be generated by non-green sources). Finally, and perhaps most importantly, having all works exclusively in digital

71. This may make sense for software, for instance, and digital databases, although the object code, flow charts, and other preparatory materials of computer programs as well as databases can be printed and/or recorded on paper.

format may lock both copyright and public domain works if software or hardware becomes out of date or if there is a technical problem that does not allow access anymore. With paper, no such problem occurs. Arguably paper can also be destroyed. Possibly the most radical way to reduce CO₂ emissions that would also accommodate the freedom to enjoy works in traditional media, such as paper, would be to require copyright holders to deposit one copy in a secure location or possibly two copies in two different locations (for safety purposes in case of flooding or fire) (in the United States, e.g., at the Library of Congress; in Europe, perhaps at one of the Directorate General of the European Commission). Some countries' laws, other than copyright law, already require this to a certain extent. For instance, in France, Article L 131-1 of the Patrimonial Code⁷² requires the deposit of all documents made available to the public (and therefore *a fortiori* copyright works) for collection and conservation purposes at the Bibliothèque Nationale de France (BnF), le Centre National de la Cinématographie, l'Institut National de l'Audiovisuel et le service chargé du dépôt legal du Ministère de l'Intérieur.⁷³ This is subject to a fine. Similarly, United States law requires deposit at the Copyright Office of all works published in the United States, and this is also subject to a fine.⁷⁴

Finally, it may be easier to argue that the other remaining classes of works, such as sound recordings and films, have to be recorded on green formats (e.g., digital formats generated by green energy). But as for all works discussed above, not only for ecological, but also for safety purposes, for the conservation of the public domain, and in order to not lock works in one single technology, at least one if not two "hard" copies should perhaps be deposited.

D. Compulsory Licenses

1. Patents

Inside intellectual property laws, other general provisions, which are not specifically targeted at protecting the environment, can implicitly have a positive impact on the environment. This is the case for

72. Law No. 2006-961 of Aug. 1, 2006, Journal Officiel de la République Française [J.O.] [Official Gazette of France], Aug. 3, 2006.

73. These mean the National Library of France, The National Centre of Cinematography, the National Audiovisual Institute, and the service in charge with the legal deposit at the Home Secretary. This requirement to deposit must respect intellectual property laws. See also Law No. 2006-961, *supra* note 72, art. L132-3.

74. See 17 U.S.C. § 407 (2000).

compulsory licenses expressly provided for within intellectual property laws. As was shown above,⁷⁵ the Paris Convention already stated that each Member *could* provide for compulsory licenses if there is abuse of a patent right, e.g., failure to work the invention.⁷⁶ The option for Members to grant compulsory licenses has been restated in Article 31 of TRIPs, which also sets out conditions that Members must adhere to if they exercise this choice.⁷⁷ Article 31 of TRIPs does not affect Article 5A(2)-(4) of the Paris Convention.⁷⁸

As with the TRIPs public policy provision, the downside of these two international provisions is that Members are not forced to adopt them. Therefore, each national intellectual property law must be checked to determine whether, if an invention (and in our specific case an environmentally friendly one) is not put to practice or if an invention improves another previously patented invention, anyone may ask for a license (on those conditions) and exploit it. Let us first look at Article 31 of TRIPs and then examine UK law.

Article 31 of TRIPs does not oblige countries to provide for compulsory licenses internally (in their intellectual property laws), nor does it do much for the protection of the environment, in particular the reduction of CO₂ emissions. But if a country decides to provide for compulsory licenses, then it has to abide by Article 31, which lays down the conditions under which Members must comply if they decide to provide compulsory licenses in their laws. As the conditions set forth in Article 31 are not exhaustive and do not refer to the environment, they

75. *Infra* Part I.B.

76. Paris Convention, *supra* note 26, art. 5(A)(2)-(4):

(2) Each country of the Union shall have the right to take legislative measures providing for the grant of compulsory licenses to prevent the abuses which might result from the exercise of the exclusive rights conferred by the patent, for example, failure to work.

(3) Forfeiture of the patent shall not be provided for except in cases where the grant of compulsory licenses would not have been sufficient to prevent the said abuses. No proceedings for the forfeiture or revocation of a patent may be instituted before the expiration of two years from the grant of the first compulsory license.

(4) A compulsory license may not be applied for on the ground of failure to work or insufficient working before the expiration of a period of four years from the date of filing of the patent application or three years from the date of the grant of the patent, whichever period expires last; it shall be refused if the patentee justifies his inaction by legitimate reasons. Such a compulsory license shall be non-exclusive and shall not be transferable, even in the form of the grant of a sub-license, except with that part of the enterprise or goodwill which exploits such license.

77. *Id.*

78. CORREA, *supra* note 11, at 313.

give room for Members to adopt provisions that force patentees to grant licenses when an invention helps to prevent global warming (based on the authority of Article 8).⁷⁹ Most relevant to the reduction of CO₂ are paragraphs (b) and (l) of Article 31. Paragraph (b) allows Members to require patentees to grant a license if they have not worked their invention, which is similar to Article 5A of the Paris Convention.⁸⁰ The person who wishes to exploit the patentee's invention must have asked for a license on reasonable conditions and failed to obtain it within a reasonable period of time.⁸¹ This requirement may be waived in case of national emergency, other circumstances of extreme urgency, and in cases of public non-commercial use.⁸² Paragraph (l) allows Members to provide that the holder of a first patent grants a license to the holder of the second patent if (i) the second invention is a dependent patent, that is, it "involve[s] an important technical advance of considerable economic significance in relation to the invention claimed in the first patent; (ii) the owner of the first patent shall be entitled to a cross-license on reasonable terms to use the invention claimed in the second patent; and (iii) the use authorized in respect of the first patent shall be non-assignable except with the assignment of the second patent."⁸³

Based on those criteria, a country could force the patentee of an eco-friendly invention to allow its use by the state.⁸⁴ For instance, if a country's government could not wait twenty (or of course less) years before it wished to use the invention to reduce carbon emissions, Article 31(b) could be used. Similarly, if the patentee of a first eco-friendly invention refuses to grant a license to a second patentee of an improvement (the dependent patent) of this first invention, Article 31(l) could be used to force him to do so.⁸⁵ The meaning of "important technical advance of considerable economic significance"⁸⁶ will have to be interpreted by national legislatures⁸⁷ and certainly also the courts, especially if national statutes do not further explain these terms.

79. *See id.*, at 318.

80. TRIPs, *supra* note 23, art. 31(b).

81. *See* CORREA, *supra* note 11, at 318.

82. *Id.*

83. TRIPs, *supra* note 23, art. 31.

84. *Id.*

85. There are more detailed provisions that Members must follow to respect TRIPs when they grant compulsory licenses. For the details, see, e.g., CORREA, *supra* note 11, at 320-23.

86. *Id.*

87. *See* CORREA, *supra* note 11, at 317-18.

The EPC does not contain provisions on compulsory licenses. How have European countries dealt with compulsory licenses in their national intellectual property laws? At the time the TRIPs agreement was negotiated, most countries in the world had some form of compulsory license in their intellectual property laws, but they were rarely used.⁸⁸ In the United Kingdom, applications for compulsory licenses are rare.⁸⁹ There is a simple reason for this. In reality, few inventors will take the trouble to get a patent and then not work it.⁹⁰ Or if they really find it difficult to work it, then it will be equally difficult for the applicant to make a clear case that he or she can solve the problems that the patentee could not.⁹¹ Nonetheless, the fact that compulsory licenses are rarely used does not mean they have no effect at all. On the contrary, the simple fact that compulsory licenses exist in the law may give incentive to the patentee to either work the invention or voluntarily license it.⁹² However, it has been noted that in many cases, the threat of a compulsory license is not strong because the licensee may need know-how from the licensor, and under the Patent Act's above-mentioned rules, the licensor is not obliged to provide it to the licensee.⁹³

UK patent law was modified following the adoption of TRIPs mainly to make a difference between WTO and non-WTO patent owners.⁹⁴ As most countries in the world are now part of the WTO, few compulsory licenses are granted, and since UK law has to comply with TRIPs,⁹⁵ UK law will be only briefly reviewed, and only the provisions

88. BENTLY & SHERMAN, *supra* note 50, at 561.

89. See CORNISH & LLEWELYN, *supra* note 62 n. 70.

90. See PAUL TORREMANS, HOLYOAK & TORREMANS *INTELLECTUAL PROPERTY LAW* 100 (4th ed., Oxford University Press 2005).

91. See *id.*

92. Friedrich -Karl Beier, *Exclusive rights, Statutory Licences and Compulsory Licences in Patent and Utility Model Law*, 30 *INTERNATIONAL REVIEW OF INTELLECTUAL PROPERTY AND COMPETITION LAW* 255, 260 (1999). BENTLY & SHERMAN, *supra* note 50, at 561-62 (noting at n. 83 that it may also be possible to ask the European Commission to impose a license if the patent or copyright holder has a dominant position). See also *Intel Technologies v. Via Technologies* [2003] F.S.R. 33 (CA); MANDEL, *supra* note 11, at 13 (using the example of a provision of the U.S. Clean Air Act requiring the owner of a patent for an invention that is necessary to comply with air emission standards to license its patent. This provision of the Clean Air Act was enacted in 1970 but apparently has never been used, therefore supporting the idea that owners of environmental patents will generally license the invention without the necessity of a compulsory license.). But see TORREMANS, *supra* note 90, at 101 (commenting that it is clear that compulsory licenses are not such a huge threat as it might first appear for patent holders). "[T]hey are rarely sought, more rarely granted." *Id.*

93. CORNISH & LLEWELYN, *supra* note 62, at 7-48.

94. See BENTLY & SHERMAN, *supra* note 50, at 562.

95. TRIPs, *supra* note 23, art. 48(A)(1)(b)(i).

applying to WTO patent owners will be addressed. First, a compulsory license can be requested only after the expiration of a period of three years from the grant of the patent and not before.⁹⁶ Second, seemingly the only relevant compulsory license that could be used to reduce CO₂ emissions is when a subsequent invention improves on an existing patent.⁹⁷ Similar wording as in Article 31(l) of TRIPs is used, as the United Kingdom must comply with the conditions set out in Article 31 since it chose to have such compulsory license.⁹⁸

2. Copyright and Related Rights

The TRIPs agreement does not contain compulsory licensing provisions other than those already existing in the Berne Convention, which Article 9 of TRIPs incorporates.⁹⁹ The Berne Convention provides the possibility for Members to grant compulsory licenses.¹⁰⁰ These relate to limits on the right to authorize broadcasting and related rights and on the right to authorize the recording of musical works and any works pertaining thereto. The Rome Convention also allows Members to provide for compulsory licenses in limited cases that relate to the broadcasting or communication to the public of sound recordings.¹⁰¹ By way of example, these provisions are no longer used in the United Kingdom.¹⁰² There are no compulsory licenses in the EU Directives that would favor the reduction of CO₂ in the air. Therefore, currently, copyright and related rights do not permit the reduction of CO₂ by way of compulsory licenses. In the United Kingdom, however, compulsory licenses can nonetheless be imposed by the Competition Commission in certain cases, mainly when the copyright owner refuses to grant a license on reasonable terms and when the license restricts the use of the work by the licensee or the right of the owner to grant other licenses.¹⁰³ These powers are exercisable in consequence of a report of the Competition Commission. So again, as with the morality provision, not surprisingly, these provisions do not specifically relate to the safeguard of the environment let alone the reduction of CO₂. But they

96. See BENTLY & SHERMAN, *supra* note 50, at 562.

97. U.K. Patent Act §48(A)(l)(b)(i) (1977); TRIPs, *supra* note 23, art. 31.

98. See, e.g., CORNISH & LLEWELYN, *supra* note 62, at 299.

99. TRIPs, *supra* note 23, art. 19.

100. Berne Convention, *supra* note 64, art. 11bis (2) and art. 13.

101. See International Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations, Oct. 26, 1961, 496 U.N.T.S. 44.

102. See BENTLY & SHERMAN, *supra* note 50, at 259-60.

103. See also TORREMANS, *supra* note 90, at 285.

could nevertheless be used to this effect if the work or use of the work reduces levels of CO₂. It is difficult to conceive of such a case, but the following examples might not be so far from reality: a copyrightable object (such as “green” hardware), a protectable work such as software, whose aim is to reduce CO₂, or a database containing information on how to reduce levels of CO₂.

Whether the use of compulsory licenses is the best way to encourage inventions that reduce carbon emissions will be discussed in Part II, Section B.

E. The Principle of Exhaustion

Do IPRs prevent the recycling of products so that more carbon emissions are produced by forcing consumers to buy more products whose production has emitted CO₂? If we accept that recycling products protected by a patent or copyright involves a re-use or transfer of the original IPR-protected product as is or a complete destruction of it—in other words, it does not involve a change (a change would fall under making or repair rather than recycle)—then IPRs do not block the recycling of products because the principle of exhaustion (or first-sale doctrine as it is called in the United States) applies. Indeed the transfer or re-use of IPR-protected products does not involve any of the exclusive rights in copyright and patent (nor for that matter design and trademark) laws. As a reminder, this principle, which applies to all IPRs, provides that the right of distribution of the IPR holder is exhausted once he or she first puts his or her product on the market or it is put on the market with his or her consent.¹⁰⁴

IPR holders may be tempted to override the principle of exhaustion by way of contracts or technological protection measures (TPMs), but this is arguably against articles 28-30 of the EC Treaty on the free movement of goods and the corresponding case law, and in some countries (France and Belgium) inalienability clauses have been held void because they are against the very definition of property and the Civil Code, which favors the free circulation of goods.¹⁰⁵ Thus contracts

104. Council Directive 2001/29, 2001 O.J. (L 167) 10-16 (EC); Law No. 93-1420 of Dec. 31, 1993, Official Journal of the European Communities, Jan. 1, 1994, at 18; The UK Patent Act does not provide for the principle, but Case 15/74, *Centrafarm BV et Adriaan de Peijper v. Sterling Drug Inc.*, 1974 E.C.R. 1147, establishes the principle of exhaustion in the European Union. See also Council Directive 89/104, 1989 O.J. (L 40) 1, 7 (EEC); Council Directive 98/71, 1998 O.J. (L 289) 28-35 (EC).

105. See SEVERINE DUSOLLIER, *DROIT D'AUTEUR ET PROTECTION DES OEUVRES DANS L'UNIVERS NUMERIQUE, DROITS ET EXCEPTIONS A LA LUMIERE DES DISPOSITIFS DE*

and TPMs that prevent recycling of copyright or patented products should be void.¹⁰⁶ Even if they were not, they may be in conflict with some EU environmental laws that require recycling at least in certain technological sectors (e.g., vehicles, packaging, and electronic equipment). These issues are beyond the scope of this Article, as they concern contracts and TPMs and not IPRs as such and are discussed in other sources, to which the reader is referred.¹⁰⁷

F. Conclusion

The first part of this Article has shown that part of the current intellectual property laws already directly or indirectly favors inventions and creations that reduce the level of CO₂ in the planet's atmosphere. Thanks to the provisions on *ordre public* and on compulsory licenses that exist in European patent and copyright laws, such IPRs should normally only be granted to inventions and creations that do not increase carbon emissions. In addition, IPR holders may not prevent recycling. Because provisions are broad, legislatures and courts can, if they so wish, interpret them to reduce or even eliminate carbon emissions. However, it may be possible to make intellectual property laws even greener if that is how governments wish to tackle global warming.¹⁰⁸ This may be one of the ways to do so, as many industrialized countries (around 140 of them) already committed in the 1997 Kyoto Protocol to cut greenhouse gases emissions by 5.2 percent compared to 1990 levels by 2012.¹⁰⁹ The Protocol came into force in February 2005,¹¹⁰ and as we know, many products and sources of energy

VERROUILLAGE DES OEUVRES § 517 (Larcier 2005), available at <http://books.google.com/books?id=w3TQHUFZW94C&printsec=frontcover> (citing Jacques Hansenne, *Les biens – Précis*, Collection Scientifique de la Faculté de Droit de Liège: Liège, p. 584, n. 631).

106. See Estelle Derclaye, *Blocking Repair and Recycle Through End User License Agreements and Technological Protection Measures*, 7th INTELLECTUAL PROPERTY SEMINAR ORGANIZED BY THE MACAO INSTITUTE OF EUROPEAN STUDIES (IEEM): "INTELLECTUAL PROPERTY LAW: REPAIRS, INTERCONNECTIONS AND CONSUMER WELFARE," Macao, June 26-27, 2006 (forthcoming, Kluwer Law International, 2008), Section A.II.

107. *Id.* at Section C.I.

108. Note that in the United States, 37 C.F.R. § 1.102(C) (2005) already allows patent applicants to ask that the patent examination be accelerated if the invention "will materially enhance the quality of the environment or materially contribute to the development or conservation of energy resources." MANDEL, *supra* note 11, at 15-16 (explaining that since regulations for accelerating environment patents are rarely used, it does not increase the incentive to innovate greenly).

109. STUART BELL & DONALD MCGILLIVRAY, ENVIRONMENTAL LAW, 639 (6th ed., Oxford University Press, 2006).

110. *Id.* at 640.

that emit CO₂ are the result of inventions and creations for which private companies, governments, and even individuals—the little or not yet known authors and inventors—desperately seek copyright or patent protection.

II. HOW TO MAKE INTELLECTUAL PROPERTY LAWS GREENER

The current intellectual property laws could be improved by modifying the morality and public order provisions and the compulsory licensing rules. Yet another way, as IPRs are human rights, is to balance IPRs with other human rights that may directly or indirectly protect the environment. Why should it be so? First, because the aim of intellectual property laws is human well-being, and individual well-being depends on that of our common planet. Therefore, in view of this ultimate international goal and the trans-national effect of global warming, all countries' intellectual property laws should be modified to allow the reduction of CO₂. Second, there is an increasing trend that says that human rights must be respected in all ways possible, including by way of intellectual property laws.

A. *Modifying the Morality and Ordre Public Provisions*

This Section does not need long developments. As argued in Part I, Section C, courts can already use the morality and *ordre public* provisions in patent and copyright laws to regulate protection of non-eco-friendly products. Nonetheless, more could be done at the international level and if not, at the regional or national levels, by modifying the relevant legal instruments. First and foremost, international conventions could be changed to force Members to prohibit inventions and creations that generate over a certain amount of CO₂ in the atmosphere; at the moment, Members are free to choose to do so or not. This would increase legal certainty, harmonization, and effectiveness since this issue is currently left to the courts of states that have adopted such rules, with the correlative disadvantages (mainly divergent decisions). For patents, a more stringent rule than that stated in *Plant Genetic Systems* may be necessary in the future so that patent offices can revoke single inventions that emit above a certain threshold of CO₂ even though there is no concrete evidence that a particular invention causes actual damage to the environment. As to copyright, as noted above, a “zero” carbon emission rule can work but may not in all cases be advisable. On the one hand, for tangible works, it may restrict artists' freedom as to the choice of materials too much, and for

intangible works, it may lock works into digital format and may not always be convenient.

B. Modifying the Compulsory Licensing Rules

1. Patents

It is clear, as has been shown above, that generally, compulsory licenses could help improve the environment.¹¹¹ Of course, more detail as to how they could improve the reduction of CO₂ is needed. As to patents, one can take two views. One view is to maintain the *status quo*—in other words, to not change the TRIPs compulsory licensing rules in the sense that countries remain free not to impose any of these rules in their intellectual property laws. Another view is to change the rules—ideally at the international level so that all TRIPs Members have to comply; otherwise at the national level so that one or more countries set the example—and force countries to provide for compulsory licenses when an inventor or creator comes up with a product emitting very little or no CO₂.

Within this latter view, two scenarios can be distinguished. First, in the event that a second inventor improves on the already green invention, at least in the United Kingdom, a compulsory licensing scheme already exists and should be maintained. It may nevertheless be argued that the general rule—that three years must lapse before the second inventor may ask that the license be scrapped—better protects the environment. In this scenario, since a cross-license has to be given to the first patentee, it should not reduce the incentives of the first patentee too much. But this is a tough choice to make. Perhaps the current compulsory licensing provisions in the United Kingdom are already providing the necessary and correct incentives. Scrapping or reducing the length of three years may be counter-productive, as first inventors may be deterred from inventing greener products and processes in the first place, knowing they will only be able to reap the full benefits of their inventions for three years. Indeed, some believe that compulsory licenses in general would deter environmental innovation.¹¹² Others argue that compulsory licenses have a positive impact because they allow follow-on innovations.¹¹³ At least one study examining some companies shows that compulsory licenses do not

111. See CORREA, *supra* note 11, at 319.

112. See MANDEL, *supra* note 11, at 12.

113. See CORREA, *supra* note 11, at 313.

diminish incentives of patentees.¹¹⁴ Further economic studies may have to be undertaken to show whether this is indeed generally the case.¹¹⁵ Certainly in the scenario where it is a simple copier who asks for the license, the rule should arguably not apply as this would considerably reduce the incentive to invent the green product in the first place. Consequently, products emitting little or no CO₂ would not be invented in the first place.

Second, as far as inventions that are not put to practice are concerned, probably the Paris Convention or TRIPs should be modified to force countries to adopt this rule; otherwise, states could of course separately take the initiative. Indeed, even if it is rare that inventions are not put to practice, the case could happen where the state, or a company with a vested interest, buys an eco-friendly invention from the inventor simply in order to stop its exploitation. If the specific country has not taken the option left in the Paris Convention to force the owner to work the invention, only competition law can be used; this requires a dominant position and the other disadvantages described in the next paragraphs.

The other view, as stated above, is to maintain the *status quo*. This may be the way to go, as competition laws may already provide a means to prevent abuses of dominant positions by IPR holders anyway.¹¹⁶

What is the best approach? Neither of these two views as proposed is in itself satisfactory. Forcing countries to adopt compulsory licensing rules for every IPR without distinction, such as those provided for in TRIPs and the more detailed ones existing in the United Kingdom, may in fact be counter-productive. This is because the rules apply despite the establishment of a dominant position by the IPR holder. Now, if there is competition in the market, the market will function properly, and no legal remedies should be imposed on inventors and creators if they do not possess a dominant position. However, in the author's view, it is better for legal certainty, to reduce costs,¹¹⁷ and because the case law

114. *Id.* at 314 (citing FREDERICK SCHERER, COMPETITION POLICY AND INTELLECTUAL PROPERTY RIGHTS IN THE KNOWLEDGE-BASED ECONOMY 107-08 (Robert Anderson & Nancy Gallini eds., University of Calgary Press 1998)).

115. See CORREA, *supra* note 11, at 314 n.169.

116. See EC Treaty art. 82; 15 U.S.C. § 2 (2000). See, e.g., European Community and U.S. case law.

117. If there is an abuse, either it will trigger litigation, which will involve costs, including for the state (since it is the competition authorities' task to detect and sue potential abusers) and at the end of the day the taxpayers, or if litigation is not engaged, the cost will rest with the users, who will be charged an excessive price or be denied access to information. In addition, competition authorities may become flooded with litigation, and delays may

is not yet very clear (at least in Europe),¹¹⁸ that the statutory law provides fairly detailed rules rather than leave this to the competition authorities.¹¹⁹ The best compromise or solution would therefore be to include this requirement of dominant position inside the patent laws' compulsory licensing provisions.

2. Copyright and Related Rights

Introducing compulsory licenses into copyright law has disadvantages, like with patent law.¹²⁰ First, it requires putting in place an administrative procedure, and this is costly and time-consuming. Second, the price of a license can be correctly evaluated only by negotiations in the market place. In that connection (between the price of a compulsory license and the market place), a compulsory license obviously takes away the exclusive right of the IPR holder, which allows him or her to negotiate the price.¹²¹ This is why, like for patents above, it makes sense to introduce compulsory licenses into copyright law only when the copyright or related right holder has a dominant position. Indeed, in this case the market cannot work efficiently, as users face a single source of power. Article 144 of the UK Copyright Act already provides for some sort of internal compulsory license,¹²² but there needs to be a report by the Competition Commission for it to apply. What

occur with handling cases.

118. It took almost ten years to have a case before the European Court of Justice (E.C.J.) to clarify the relationship between intellectual property and Article 82 of the EC Treaty. The only three intellectual property cases preceding the current latest ruling on the issue (*Microsoft v. Commission*, T-201/04, 2007 O.J. (L 179)) are *IMS Health GmbH & Co. OHG v. NDC Health GmbH & Co. KG*, C-418/01, 2004 E.C.D.R. 239; *Radio Telefis Eireann (RTE) & Indep. Television Publ'ns Ltd. (ITP) v. Commission* C-241/91P & C-242/91, 1995 E.C.R. I-743; and *Tiercé Ladbroke SA v. Commission of the European Communities*, T-504/93, 1997 E.C.R. II-923; [1997] 5 C.M.L.R. 309. The latter two decisions gave confusing messages about the conditions under which a refusal to license information is abusive, while the *IMS* decision cleared the matter. Unfortunately, it is arguable that the *Microsoft* decision has reopened Pandora's box.

119. See also FRANÇOIS LÉVÊQUE & YANN MÉNIÈRE, *THE ECONOMICS OF PATENTS AND COPYRIGHT* (Berkeley Electronic Press, 2004), available at <http://ssrn.com/abstract=642622> (last visited March 18, 2008).

120. See BENTLY & SHERMAN, *supra* note 50, at 259.

121. *Id.*

122. UK law also provides for a compulsory licensing system for *sui generis* right-protected databases close to that provided in Section 144 of the Copyright Act. See Schedule 2 of the Copyright and Rights in Databases Regulations 1997, SI 1997/3032, *HIS* – Issue 302, p. 10145 (effective Jan. 1, 1998). The European *sui generis* right protects the substantial investment that went in the collection, presentation, and/or verification of the data rather than the originality of the database's structure/organization (which copyright law already protects). See Council Directive 96/9, 1996 O.J. (L 077) 20, 20-28 (EC).

there would need to be is a compulsory license scheme that applies to protected subject matter owned by the copyright or related right holder in a dominant position, similar to those that already exist under patent law compulsory licenses. In both cases, action could be taken by anyone (be it users, the general public, or the competition authorities themselves). However, in the case of copyright works, such compulsory licenses should arguably respect the freedom to create explained in Part I, Section C.2.

Copyright laws at all levels would also need to ensure that official documents containing original expression relating to the reduction of CO₂ are not protected by copyright.¹²³ Indeed, as such copyright protected subject-matter is made by the state (parliament, government, or judiciary), no copyright should subsist because users of the materials have already paid for it through their taxes. The morality provision could also apply to this situation, but it is less legally certain than the solution advocated here. This proposed change could apply to judgments and laws in the United Kingdom for instance—at least those that contain such original expression relating to the reduction of CO₂ in the atmosphere—that are still protected by copyright. Similarly, publicly funded databases should remain unprotected by the European database *sui generis* right.¹²⁴ The data should be available to anyone for free or at the cost of sending it (which may be zero if available and sent electronically). Admittedly, such provisions would not be compulsory licenses but simply an exclusion from copyrightable subject matter or subject matter protected by related rights.

C. Resorting to Human Rights

One way to reduce levels of CO₂ is to argue that IPRs must respect other human rights that relate to the protection of the environment. IPRs are arguably human rights, either as such or within the right to the respect of one's property. Many of the main international binding and non-binding instruments recognize the moral and material interests of authors and inventors as human rights.¹²⁵ In Europe, IPRs are human

123. See Art. 2(4) Berne Convention.

124. Initially, the draft Database Directive provided for a compulsory license for sole source databases, but it was scrapped as a result of lobbying. See art. 8.1, COM (1992) 24 final.

125. Universal Declaration of Human Rights art. 27, G.A. Res. 217A 71, 76 183d plen. mtg., U.N. Doc A/810 (Dec. 10, 1948); International Covenant on Economic, Social and Cultural Rights art. 15, G.A. Res. 2200A (XXI) 49, 51 1496th plen. mtg., U.N. Doc. A/6316 (Dec. 16, 1966); Charter on Fundamental Rights of the European Union art. 17, Dec. 18, 2000

rights falling into Article 1 of the Additional Protocol to the European Convention of Human Rights (ECHR), which protects the right to the respect of one's property.¹²⁶ IPRs have also been recognized as human rights in the literature.¹²⁷ On the other hand, the ECHR does not contain a right to a clean and/or healthy environment.¹²⁸ Nor does international law yet recognize such a right.¹²⁹ Therefore, at present, there is no such international enforceable right.¹³⁰ Thornton & Beckwith note that courts and commentators have been reluctant to recognize a human right to a clean and/or healthy environment for three main reasons.¹³¹ First, as human rights protect individuals, in order for the right to be violated, there must be a direct and substantial impact on a particular individual. Second, human rights and the protection of the

O.J. (C 364) 1, 12 (stating that intellectual property is protected). However, the first two instruments leave states the choice of the form in which to recognize these human rights. Property rights are not the only form.

126. Article 1 of the First Additional Protocol provides that "every natural or legal person is entitled to the peaceful enjoyment of his possessions. No one shall be deprived of his possessions except in the public interest [. . .]." *Anheuser-Busch Inc. v. Portugal*, No. 73049/01, Eur. Ct. H.R. (2007), has recently confirmed this.

127. See, e.g., Geiger, *supra* note 15; ALAI Congress on Copyright and Freedom of Speech, Barcelona 2006, available at <http://www.aladda.org/eventos.php?id=aladda&evento=0606> (last visited Aug. 28, 2007); CIER Utrecht, Conference on Intellectual Property Rights and Human Rights, July 3-4, 2006.

128. STUART BELL & DONALD MCGILLIVRAY, ENVIRONMENTAL LAW 79 (6th ed., Oxford University Press, 2006); Ann Sherlock & Françoise Jarvis, *The European Convention on Human Rights and the Environment*, EUR. L. REV. 15 (1999). "Damage to the environment is not in itself a breach of the convention." *Id.* See also *Lough v. First Sec'y of State* [2004] 1 W.L.R. 2557, 2569 (CA (Civ Div)) (observing that "[t]here is no explicit right in the Convention to a clean and quiet environment").

129. See, e.g., JUSTINE THORNTON & SILAS BECKWITH, ENVIRONMENTAL LAW, 386 (2nd ed., Sweet & Maxwell 2004) (noting the three main international human rights instruments, the International Covenant on Civil and Political rights, the International Covenant on Economic, Social and Cultural Rights, and the Universal Declaration of Human Rights, barely mentioning the relationship between the environment and human rights); Jarvis & Sherlock, *supra* note 126, at 28 (stating that the International Covenant on Economic, Social and Cultural Rights of 1966 refers to "the improvement of all aspects of environmental and industrial hygiene"); Karrie A. Wolfe, *Greening the International Human Rights Sphere? An Examination of Environmental Rights and the Draft Declaration of Principles on Human Rights and the Environment*, 13 J. ENVTL. L. & PRAC. 109 (2003); Barry E. Hill, Steve Wolfson, & Nicholas Targ, *Human Rights and the Environment: A Synopsis and Some Predictions*, 16 GEO. INT'L. ENVTL. L. REV. 359, 376 (2004). In 1994, the United Nations issued a Draft Declaration of Principles on Human Rights and the Environment. Then followed the 2002 World Summit on Sustainable Development, which shows a trend favoring a human right to a clean and healthy environment. See Hill, Wolfson & Targ, at 376-77.

130. *Id.* at 361, 399.

131. THORNTON & BECKWITH, *supra* note 129, at 386.

environment may sometimes clash. For instance, the right of Amazonian Indians not to be hungry and therefore to cut trees to create farmland goes against long-term reduction of CO₂. Third, human rights only protect the current generation. They cannot be used to promote sustainable development, i.e., the preservation of the environment for future generations.¹³² These reasons may very well undermine the use of human rights to reduce CO₂ emissions. Thornton and Beckwith also note that it currently looks unlikely that such a right to a decent environment will ever be developed at an international level because of this third reason.¹³³ The international community seems instead to have shifted to the notion of sustainable development.¹³⁴

Nonetheless, in Europe, several human rights have been used by parties to try to benefit from a healthy environment. Therefore, there may be some potential to use current human rights to reduce CO₂ emissions. A helpful rule is that under the ECHR, all human rights are on equal footing, so IPRs must be balanced with other human rights.¹³⁵ How have claimants argued that the environment was damaged on the basis of other human rights? Claimants have used Article 2 (right to life), Article 3 (right to physical integrity), Article 8 (right to privacy), Article 10 (right to freedom of expression), and Article 1 of the First Additional Protocol to the ECHR (right to the respect of one's property) with mixed results. What comes out of the case law is the following.

The possibility to claim that there is a right, albeit indirect, to a clean and/or healthy environment under the current state of the ECHR is slim but not unreal. The major hurdle is that an individual must be specifically affected.¹³⁶ This means that an environmental pressure group would have to introduce an action based on the right of a particular individual, "focusing on the individual's rights rather than on the more general concerns for the environment."¹³⁷ Under Article 8, for

132. Sustainable development is a new and still uncertain concept. The most used definition, which originates from the report by the Brundtland Commission, *Report of the World Commission on Environment and Development, delivered to the General Assembly, A/42/187*, 154 (Dec. 11, 1987), is development that "[m]eets the needs of the present without compromising the ability of future generations to meet their own needs." BELL & MCGILLIVRAY, *supra* note 109, at 62.

133. THORNTON & BECKWITH, *supra* note 129, at 388.

134. *Id.* at 388. *Contra* Hill, Wolfson & Targ, *supra* note 99, at 376.

135. Torremans, *supra* note 17, at 17.

136. *See, e.g.*, Jarvis & Sherlock, *supra* note 126, at 15; THORNTON & BECKWITH, *supra* note 129, at 386.

137. Sherlock & Jarvis, *supra* note 128, at 15.

instance, there must be a substantial, direct, and serious interference with an individual's home.¹³⁸ On the other hand, as early as 1991, in *Fredin v. Sweden*,¹³⁹ the European Court of Human Rights recognized "that environmental protection is a valid public interest that can be employed by states in interfering with individual rights."¹⁴⁰ Most importantly, states party to the ECHR have positive duties. In *Guerra v. Italy*,¹⁴¹ Judge Jambrek thought that "if information was withheld by a government about circumstances that foreseeably presented a real risk of danger to health and physical integrity, then such a situation might be protected by Article 2."¹⁴² In the same vein, under Article 8's case law,¹⁴³ the state has the positive duty to take action even if the pollution is caused by a third party and not the state, for instance private companies.¹⁴⁴ Finally, Article 1 of the First Additional Protocol to the ECHR can be "invoked against a State when external environmental nuisances affect a person's enjoyment of possessions, or it can be invoked from the opposite direction: when a State's actions to protect the environment interfere with enjoyment of property."¹⁴⁵ The *Fredin* case also shows that Article 1 of the First Additional Protocol does not prevent states from taking measures to protect the environment, although they limit the right to the respect of one's property.¹⁴⁶

The consequences of these precedents seem to imply that, at least in Europe, human rights indirectly protecting the environment, including the reduction of carbon emissions, can limit IPRs. In other words, if all the branches of the state (in our case this would include intellectual property offices) know that an invention or creation may have negative

138. *Hatton v. United Kingdom*, App. No. 36022/97, 37 Eur. H.R. Rep. 28 (2003) (noise caused by night flights disturbed claimants' sleep in neighborhoods near Heathrow airport). See K.L. Morrow, *The Rights Question: The Initial Impact of the Human Rights Act on Domestic Law Relating to the Environment*, J. PLAN. & ENVT. L. 1010, 1012 (2005).

139. *Fredin v. Sweden* (No. 1), App. No. 12033/86, 192 Eur. Ct. H.R. (ser. A) (Mr. Fredin's right to exploit a gravel pit on his property was not breached by a change in the law which withdrew his exploitation permit in order to protect the environment.).

140. Morrow, *supra* note 138, at 1020.

141. *Guerra v. Italy*, App. No. 14967/89, 26 Eur. H.R. Rep. 357 (1998) (Guerra lived one kilometer away from a chemical factory and was not informed of its risks on his health.).

142. *Sherlock & Jarvis*, *supra* note 128 at 17.

143. See *Lopez Ostra v. Spain*, App. No. 16798/90, 20 Eur. Ct. H.R. (ser. A, no. 303-C) 277 (1994); *Powell and Rayner v. UK*, App. No. 9310/81, 172 Eur. H.R. Rep. (ser. A, no. 172) 355 (1990); *Guerra*, 26 Eur. H.R. Rep. 357; *Hatton*, 37 Eur. H.R. Rep. 28.

144. *Sherlock & Jarvis*, *supra* note 128, at 19; *THORNTON & BECKWITH*, *supra* note 126, at 392.

145. *Sherlock & Jarvis*, *supra* note 128, at 22.

146. *Id.* at 23.

effects on the environment, e.g., increasing levels of CO₂, the responsibility lies with the state to prevent harm to life, privacy, property, and arguably freedom of expression.¹⁴⁷ This may mean that, while the state should ideally modify intellectual property laws to attain such results, in the meantime, individuals can try and use several different human rights before courts to force the state to take action to eliminate or at least reduce carbon emissions.¹⁴⁸ Nonetheless, as has been seen above, the two major hurdles are that the ECHR does not recognize a specific right to a healthy environment, and that even if it did, in order to have a claim an individual must be directly concerned. In addition, the case law reveals that states have a wide margin of appreciation as, generally, human rights are limited by rights of others (e.g., Article 8(2)).¹⁴⁹ So it may be very difficult for an individual to claim that an invention or work by itself affects his or her personal environment because it emits CO₂. These discrepancies may prompt the international community and/or states to develop a specific human right (nationally, regionally, and internationally) to a clean and healthy environment;¹⁵⁰ the notion includes the right not to live in a greenhouse, or alternatively to produce similar effects by further developing the notion of sustainable development, as it may be more appropriate.¹⁵¹

147. In *Guerra*, it was held, however, that the state has no positive duty to collect and disseminate information.

148. According to *Jarvis & Sherlock*, *supra* note 128, at 24 (in view of the decided cases, ECHR art. 8 seems to be the best legal ground for claimants to win if they think their environment is degraded).

149. See, e.g., *Buckley v. UK*, App. No. 20348/92, 23 Eur. H.R. Rep. 101 (1996); *Hatton*, 37 Eur. H.R. Rep. 28 (holding that Article 8 was not breached).

150. *Morrow*, *supra* note 138, at 1021.

151. Internationally the concept, on whose meaning there is no international consensus, is still found only in soft law documents. But it has been recognized by the International Court of Justice as being the need to balance economic development and environmental protection. See *BELL & MCGILLIVRAY*, *supra* note 109, at 63-64. In Europe, EC Treaty art. 2 includes the obligation for the EU to promote a "harmonious, balanced and sustainable development of economic activities." It applies across all areas. This article has not been interpreted by the E.C.J. yet, but there are two documents so far at EC level that set priorities, including climate change, but they and their objectives are not legally binding. *Id.* Note that Articles 6 and 174(1) EC Treaty favor integrating environmental protection into other policy sectors rather than favoring a rights-based approach. *Id.* at 79. Finally, in the United Kingdom, several acts require a contribution to the achievement of sustainable development. However, as the notion is not defined and the wording of the relevant sections is "too wide to create a legally enforceable duty," much is still to be done in the United Kingdom. *Id.* at 66.

D. Implementation Practicalities

Two problems may arise from the proposed changes to the intellectual property laws. First, what should be the maximum amount of CO₂ that an invention or creation should emit? Arguably, every living thing and activity inevitably produces some CO₂. It is only its *excessive increase* by man which produces global warming. One yardstick could be the Kyoto targets, or the national targets if higher. For instance, if the target is to decrease the levels of CO₂ by a certain percentage less than the levels at a certain previous date, this should be the standard for the Patent Offices to follow. Second, and related to this point, who should bear the burden of proof that the invention does not emit more than the yardstick? If this burden is borne by inventors and creators, it might discourage them from innovating or creating in the first place. If it is borne by the state, every taxpayer will contribute to the cost. Perhaps this solution may be more acceptable. Otherwise, a shared cost between the creators or inventors and society can also be envisaged.

CONCLUSION

Current intellectual property laws already provide a good working framework to reduce levels of CO₂ in the planet's atmosphere. If a particular state has chosen to implement the *ordre public* and compulsory licensing provisions found in international treaties, courts if they wish can already use these provisions to prevent the protection of inventions and works emitting (too much) CO₂. The principle of exhaustion already preserves the recycling of media in which IPRs are embodied. Human rights laws may also perhaps contribute to the reduction of CO₂. But international, regional, and national intellectual property laws could be honed further if governments wish to decrease levels of CO₂ even more. A specific public policy and morality provision prohibiting patenting inventions and copyrighting works generating above a certain level of CO₂ should be enacted, preferably internationally. Similarly, states should be forced to enact compulsory licenses, but the latter should only be used when the patent or copyright owners have a dominant position. It would be better to set this clearly in legislative instruments rather than leaving it to competition authorities. Public databases and copyright works (e.g., those made by the state) should remain unprotected.

In the meantime, competition law can of course be used as an external safeguard to prevent abuses of IPRs such as refusals to work an

environmentally friendly invention. Competition rules (at least in the EU) can also promote innovation of greener technologies (e.g., the reduction of CO₂) even though they are the result of agreements or concerted practices (e.g., cartels) between undertakings that are normally prohibited by competition law.¹⁵² Finally, in any case, inventions and copyright works may also have to comply with international, national, and regional environmental rules. This second external safeguard is already somewhat effective, at least in Europe.¹⁵³ Several Directives already prescribe energy efficiency or energy labeling for refrigerators, freezers, and boilers.¹⁵⁴ As far as IPRs are concerned, this would mean that if such appliances are patented, they must respect the prescriptions of these Directives. Another very recent binding measure is the emissions trading scheme (ETS) provided by Directive 2003/87.¹⁵⁵ This Directive obliges a number of industries (including oil

152. Article 81(3) EC Treaty derogates to the general prohibition of Article 81(1) and allows agreements between undertakings if they promote progress. It reads:

The provisions of paragraph 1 may, however, be declared inapplicable in the case of: any agreement or category of agreements between undertakings, any decision or category of decisions by associations of undertakings, any concerted practice or category of concerted practices, which contributes to improving the production or distribution of goods or to promoting technical or economic progress, while allowing consumers a fair share of the resulting benefit, and which does not: (a) impose on the undertakings concerned restrictions which are not indispensable to the attainment of these objectives; (b) afford such undertakings the possibility of eliminating competition in respect of a substantial part of the products in question.

EU competition law also regulates anti-competitive aspects of intellectual property licenses, which includes know-how. See Commission Regulation 772/2004, on the application of Article 81(3) of the Treaty to categories of technology transfer agreements, O.J. (L 123) 11 (EC).

153. Mandel notes that U.S. environmental laws, such as the Clean Air Act and the Clean Water Act, have not succeeded much in promoting environmental innovation. MANDEL, *supra* note 11, at 2. In Europe there are regulatory bodies in the EC and the UK which determine whether some practices should be prohibited, among other reasons, to ensure the protection of the environment. CORNISH & LLEWELYN, *supra* note 60, 5-83.

154. STRECK & FREESTONE, *supra* note 10, at 101. See Council Directive 96/57, Energy Efficiency Requirements for Household Electric Refrigerators, Freezers and Combinations Thereof, 1996 O.J. (L 236) 36 (EC); Commission Directive 95/12, Implementing Council Directive 92/75/EC With Regard to Energy Labelling of Household Washing Machines, 1995 O.J. (L 136) 1 (EC); Commission Directive 96/60 Implementing Council Directive 92/75 With Regard to Energy Labelling of Household Combined Washer-Driers, 1996 O.J. (L 266) 1 (EC).

155. Council Directive 2003/87, 2003 O.J. (L 275) 32 (EC). See also THORNTON & BECKWITH, *supra* note 126, at 70. It was amended by Directive 2004/101 amending Directive 2003/87 establishing a scheme for greenhouse gas emission allowance trading within the Community, in respect of Kyoto Protocol's project mechanisms, 2004 O.J. (L 338) 1, so that the EU ETS takes into account the Kyoto Protocol's targets. For details, see STRECK & FREESTONE, *supra* note 10, at 104; Davies, *supra* note 12.

refineries, coke ovens, the metal industry, the mineral industry, and the broad paper industry) to have a permit that states the amount of greenhouse gases they can emit. Again, this means that copyright works or patented inventions made by these processes have to respect this Directive. The EU will surely adopt more similar environmental measures in the future. In this connection, conflicts with artists' creativity as to choice of materials may already be an issue, and a balance may have to be struck between copyright law and environmental law. Building greener patented inventions may on the other hand be more feasible, as choice of materials is generally not dictated by considerations of aesthetics (unless a patented product is also protected by a design right or a copyright). A full discussion of the relationship between IPRs and environmental law is worth exploring but is beyond the scope of this Article.

In conclusion, while progress (the goal of intellectual property laws) normally aims to improve human life, as the industrial revolution has shown, this has not been without hick-ups, the main hick-up being pollution and, more specifically, global warming. But as history has a thousand times shown, humans are capable of the worst and the best. To save themselves, there is hope that thanks to the existing mechanisms already in place in intellectual property laws and the above-mentioned remedies to their imperfections, carbon emissions will decrease in the not too distant future. In addition, intellectual property laws, human rights, competition law, and environmental rules can certainly work hand in hand to fight global warming.